Climate Change and Human Health Literature Portal

National Institute of
Environmental Health Sciences

Effect of meteorological factors on clinical malaria risk among children: An assessment using village-based meteorological stations and community-based parasitological survey

Abstract:

BACKGROUND: Temperature, rainfall and humidity have been widely associated with the dynamics of malaria vector population and, therefore, with spread of the disease. However, at the local scale, there is a lack of a systematic quantification of the effect of these factors on malaria transmission. Further, most attempts to quantify this effect are based on proxy meteorological data acquired from satellites or interpolated from a different scale. This has led to controversies about the contribution of climate change to malaria transmission risk among others. Our study addresses the original question of relating meteorological factors measured at the local scale with malaria infection, using data collected at the same time and scale. METHODS: 676 children (6-59 months) were selected randomly from three ecologically different sites (urban and rural). During weekly home visits between December 1, 2003, and November 30, 2004, fieldworkers tested children with fever for clinical malaria. They also collected data on possible confounders monthly. Digital meteorological stations measured ambient temperature, humidity, and rainfall in each site. Logistic regression was used to estimate the risk of clinical malaria given the previous month's meteorological conditions. RESULTS: The overall incidence of clinical malaria over the study period was 1.07 episodes per child. Meteorological factors were associated with clinical malaria with mean temperature having the largest effect. CONCLUSION: Temperature was the best predictor for clinical malaria among children under five. A systematic measurement of local temperature through ground stations and integration of such data in the routine health information system could support assessment of malaria transmission risk at the district level for well-targeted control efforts.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1913509

Resource Description

Communication: ☒

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☒

audience to whom the resource is directed

Health Professional, Policymaker

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Early Warning System: ⌧

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

 A focus of content

Exposure : ⌧

weather or climate related pathway by which climate change affects health

 Meteorological Factors, Precipitation, Temperature

Geographic Feature: ⌧

resource focuses on specific type of geography

 Rural, Urban

Geographic Location: ⌧

resource focuses on specific location

 Non-United States

   Non-United States: Africa

     African Region/Country: African Country

     Other African Country: Burkina Faso

Health Impact: ⌧

specification of health effect or disease related to climate change exposure

 Infectious Disease

   Infectious Disease: Vectorborne Disease

     Vectorborne Disease: Mosquito-borne Disease

     Mosquito-borne Disease: Malaria

Medical Community Engagement: ⌧

resource focus on how the medical community discusses or acts to address health impacts of climate change

 A focus of content

Mitigation/Adaptation: ⌧

mitigation or adaptation strategy is a focus of resource

 Adaptation

Population of Concern: A focus of content

Population of Concern: ⌧

populations at particular risk or vulnerability to climate change impacts

Children

Resource Type: ⊠

format or standard characteristic of resource

Research Article

Timescale: ⊠

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ⊠

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content